

Cultivar and Clone Considerations

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My Talk Today

- Defining variety, varietal, cultivar, clone
- Ways to select vines for your vineyard
- Importance of Clones
- Interesting plant material for now and the future

International Code of Nomenclature for Cultivated Plants on Cultivar

- The term **cultivar** most commonly refers to an assemblage of plants selected for desirable characters that are maintained during propagation. ... Most **cultivars** arose in cultivation, but a few are special selections from the wild.

Variety

- An older synonym for cultivar or hybrid (now discouraged by the International Code of Nomenclature for Cultivated Plants.) It is still used especially with regard to grapes and rice.

Varietal vs. Variety

- A **varietal** wine is a wine made primarily from a single named grape variety, and which typically displays the name of that variety on the wine label. Examples of grape varieties commonly used in **varietal wines** are **Cabernet Sauvignon, Chardonnay** and **Merlot**.
- (Varietal= adjective, not a noun!)

What is a clone?

- **Clone**: wine **grape vines** that are genetically identical, and propagated from a single mother plant, usually a single stem
- Origin: early 20th century: from Greek *klōn* 'twig'.

Choosing Wine Grape Cultivars

- Market
- Heat Summation
- Site evaluation
- Experimental Data
- Intuition

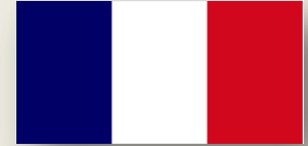
Peculiarities in the Winegrowing World:

- Plant genetics of many of our cultivars are very, very, very old!
- Market decisions in some cases were made 400-800 years ago that are still very much in play
- It is very difficult to make inroads with new plant material and wines
- Presently, plant breeding programs for new wine grape cultivars are very limited in their success in terms of acceptance

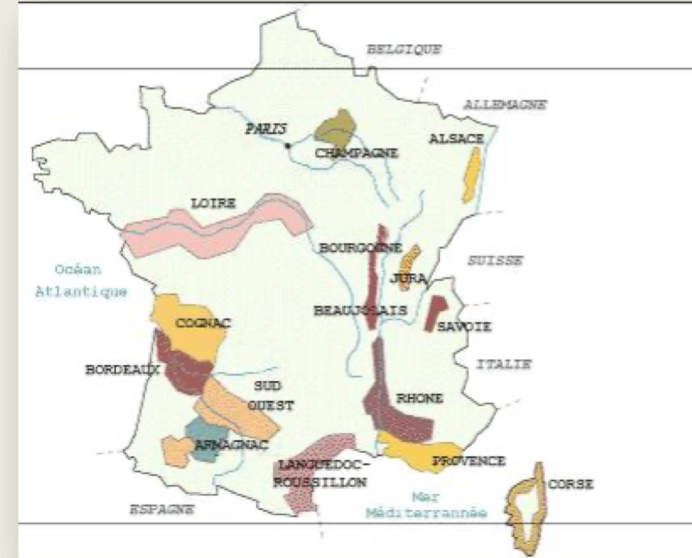
Selecting Material: Market

- You have to sell what you grow
- Upside: Having a contract really strengthens your business plan and is an important part of risk management
- Risk: Trends come and go—good example: Merlot, Pinot gris, Sangiovese, Syrah
- Downside: Plant material may not be really suited for the vineyard that it is planted in

The International “Varieties”

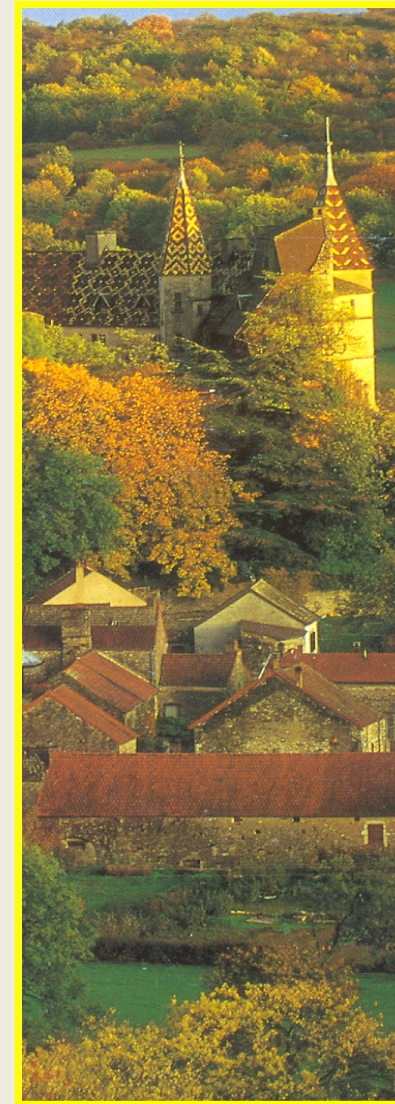


- Cabernet Sauvignon
- Merlot
- Sauvignon Blanc
- Pinot Noir
- Chardonnay



Why the International Varieties?

- Long modern history of export production
- Perceived quality
- Tradition





The British Isles and Wine



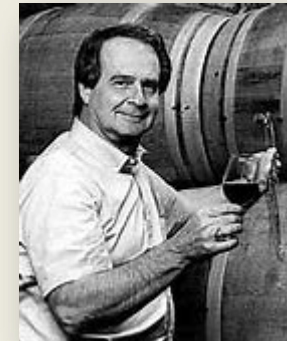
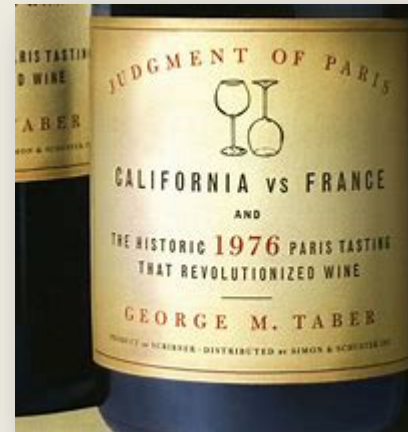
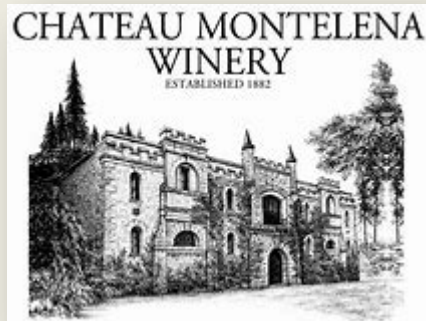
- 1152: Eleanor of Aquitaine marries Henry Plantagenet and French wine can be shipped duty free to England
- By 1650's Chateau Haut-Brion wine from Bordeaux is imported to England as a luxury item
- By 1700's England is the major market for "First Growth" claret, which was made with Bordeaux cultivars
- Significant imports of Champagne, Cognac, sherry, port and wines from the Loire, Burgundy

European Viticulture

- Climate is more continental—more rain, overall cooler in many areas compared to California
- Grapes are grown from 38-50th parallel
- Vintage years happen when grapes become fully ripe



The California Fine Wine Movement



Leading California Cultivars by Acreage

Red Varieties	Origin	Acreage
Cabernet sauvignon	Bordeaux, France	89,697
Pinot noir	Burgundy, France	44,027
Zinfandel (Primitivo)	Croatia; Apulia, Italy	47,827
Merlot	Bordeaux, France	43,339
Syrah	Rhône Valley, France	18,063
Total Red Variety Acres, California		308,733
White Varieties		
Chardonnay	Burgundy, France	97,819
French Columbard	Cognac, France	22,062
Sauvignon blanc	Bordeaux, Loire Valley, France	16,085
Pinot gris	Burgundy, Alsace, France	15,777
Muscat of Alexandria	Mediterranean Region	5,137
Total White Variety Acres, California		183,968

Ways to Select Cultivars



Heat Summation



Macro, Meso and Microclimates

- Degree summation is a great place to start evaluating macro climates
- Distance from the Pacific Ocean, fog incidence, wind
- Slope, aspect, elevation affect meso climates
- Vineyard design, vine training affect microclimates

Heat Summation Systems

- Winkler Index (UC Davis)
- Mean Daily Temperatures
- Other
- Good place to start for *Macroclimate evaluation*

Winkler Heat Summation Index

- Growing degree days: Cumulative amount of functional heat experienced during frost free growing season
- Sum of mean daily temperature ($\text{max-min} \div 2$) – 50°
- Five regions: I (1700-2200 dd); II (2200-2800); III (2800-3500); IV (3500-4000); V (4000+)
- Data loggers summing up temperatures above 50° also useful, not quite aligned with WI, but close enough

Region I: 1700 to 2200 DD

- One of California's Coolest Area
- Gewurtztraminer, Riesling, Pinot Gris, Pinot Noir and Chardonnay well suited
- Elevation, slope, aspect, soils very important
- "Warm spot in the cool region"
- Example: Deep end of Anderson Valley



Region II: 2200-2800 DD

- Low summation: Pinot Noir, Chardonnay
- High summation: Sauvignon Blanc, Merlot, Cabernet Franc, Cabernet Sauvignon, Zinfandel, Syrah (these can be tricky in cool, wet years)
- Elevation, slope, aspect, soils very important
- Example: Boonville, Yorkville Highlands



Region III: 2800-3500 DD

- California's interior coastal valleys
- Great region for Zinfandel, Petite Sirah, Syrah, Sangiovese, Nebbiolo, Merlot, Cabernet Sauvignon
- In deep soils, Chardonnay and Sauvignon blanc, Viognier, Roussanne, Marsanne
- Big Valley, Ukiah, Hopland, Red Hills



Region IV: 3500-4000 DD

- Warmer interior of California
- Large crops of International Varieties, very important to Cal Wine Industry
- Mediterranean cultivars can be quite interesting such as Touriga nacional, Aglianico, Nero d'Avila



Region V: 4000+ DD

- Table Grapes!
- Raisins
- Deep interior valleys
- Wine grapes grown here as well, often need fixing at the winery



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But Wait, There is More!

The Mediterranean Region

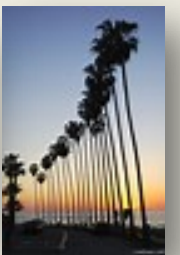
Wine Grape Diversity and
Warm Growing Conditions



California Has A Mediterranean Climate



- Most California wine growing occurs between latitude 33-38 degrees (vs. 44-50 degrees for French winegrowing regions)
- Climate is characterized by warm dry summers and cool (but not freezing) winters
- One percent of the earth's surface
- One of six areas on the planet



Vineyard Area in Southern Europe



Country	Acres
Greece	330,000
Italy	2,305,000
Spain	3,060,000
Portugal	647,500

Some Features of Med Cultivars

- Generally productive—tradition of volume drinking
- Late bud break, late harvest
- Good acidity in heat in many cases
- Vigorous, take heat well



Where Have Med Cultivars Been?

- Locals drank them in large volumes
- Fine wine model has recently arrived in the past few decades
- Wine blocked from importation/commerce in Great Britain until past century
- Cultivars were imported into California and were the basis of our wine industry at first



Autochthonous

au·toch·tho·nous

[ô'täkTHənəs]

ADJECTIVE

1.(of an inhabitant of a place) indigenous rather than descended from migrants or colonists.

2.*synonyms:*

3.indigenous · native · aboriginal · first · earliest ·
early · initial · primary · primordial · primal · primeval
· autochthonic · autochthonous



Some Stand Out Cultivars

Assyrtiko

- Bright, mineral, flavorful fresh wine
- Also used to make Vino Santo, dessert wine



Island of Santorini



Nero d'Avola

- Native to Sicily
- Very late ripening
- Productive
- Vigorous, large leaves, clusters





Aglianico

- Very high quality red
- Late
- Not super vigorous
- Small to medium clusters
- Superb color, flavor



Amalfi Coast





Touriga nacional

- Very late
- Small clusters
- Deep, deep color
- Good acidity
- Good flavors
- Douro Region of Portugal
- Long lived as fortified or table wine





Graciano

- Productive
- Great color, flavor
- Vigorous
- Usually blended with Tempranillo, Garnacha, Mazuelo
- Rioja Region of Spain



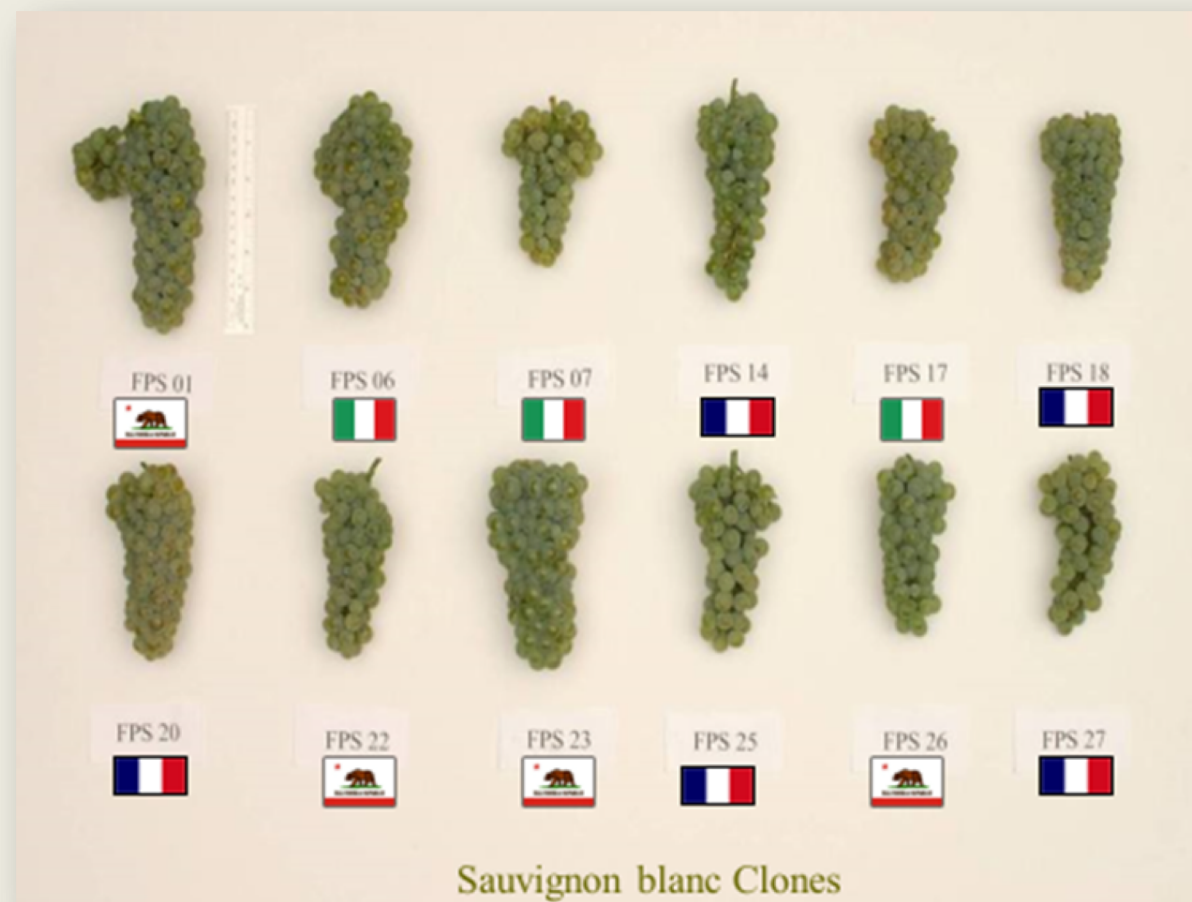
Importance of Clones

- Fine tuning in some respects. Well designed and managed vineyard has much larger impact on wine quality
- Assurance of plant health, maybe...
- If the vineyard is marginal for some cultivars, clones can make a difference either increasing yield, or increasing the potential for ripeness, improving flavors, or resisting bunch rot, mildew

Principles behind Clonal Selection

- Initially, improvement of plant health and yield
- In California, Harold Olmo, Curtis Alley, William Hewett and Austin Goheen began collecting and preserving clones
- UC Foundation Plant Services created as repository for healthy materials
- Similar activity in Europe
- Second round of clonal selection has been for quality

Sauvignon blanc Clones



There is No “Best” Clone

- Some are selected for yield, fit in value priced wine programs
- Others have significantly lower yields, but taste better and are right for more expensive offerings

A Clone Selected in Another Country is Not Automatically Superior to Local Clones

- Conditions where clones are selected make a difference
- Understand why they were selected
- Dijon Clones of Chardonnay make sense in Burgundy and Oregon, they taste “washed out” in Ukiah and have 60% of the yield of FPS Clone #04
- Helpful if someone has tested clones in your region

Massal Selection

- **Selection Massale** (aka **Massal Selection**) is a French wine growing term for the practice of replanting new vineyards with cuttings from exceptional old vines from the same (or nearby) property. **Massal Selection** is what they call the “old way” of propagating vineyards that's been replaced with clonal nursery stock
- Biggest problem today is accidentally moving viruses or other diseases into new plantings

Multi-clonal Plantings Can Add Complexity

- Burgundy has new clones, they are going to be sold from the nursery together as a group
- Many fine wine producers think that a mix of clones makes the most complex wines, usually planted in separate blocks
- Pinot noir in Anderson Valley: Pommard Clone FPS 04; Wadenswil Clone FPS 02A; Dijon Clones 115,667, 828, and maybe even the Champagne clone FPS 32.



Heritage Clones



- Term co-opted from Mendocino County rose growers
- Applies to plant material selected from very old vineyards
- Interesting because some material is pre-phylloxera disaster in Europe
- Some quality selections of Syrah, Sauvignon blanc, Zinfandel, Cabernet sauvignon, Chardonnay and others
- Potentially high quality



Intuition



- Helps if you are clairvoyant
- Some people just seem to know
- André Tchelistcheff, Ornellaia, and Masseto